

National Aeronautics and Space Administration
Commercial Space Committee
of the
NASA Advisory Council

April 27, 2011
NASA Headquarters
Washington, DC

Meeting Minutes

John Emond Executive
Secretary Commercial Space
Committee

Bretton Alexander
Chair, Commercial Space Committee

*Meeting report prepared by
John Emond*

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John Emond opened the meeting at 2:15 pm after a short delay due to computer problems. The meeting was an open meeting under the Federal Advisory Committee Act.

Mr. Emond introduced Bretton Alexander, committee chair.

Mr. Alexander began the meeting by recognizing the passing of one of the Commercial Space Committee members, John Michael Lounge, who passed on March 1, 2011 after an illness. Mr. Alexander noted Michael Lounge's long and impressive career, as a former astronaut, Boeing and SpaceHab executive among other positions of responsibility. Mr. Alexander reflected on Mr. Lounge's vibrant part of the Committee, his insight, active engagement in Committee discussions and analyses, as well as the warmth of his character. Mr. Alexander gave a note of thanks to Mr. Lounge for his many contributions to this Committee and to others, and expressed condolences for his family.

On February 14, 2011 Administrator Bolden provided the NASA response to the Commercial Space Committee's portion of recommendations submitted by the NASA Advisory Council to Administrator Bolden. The formal response by Administrator Bolden is made part of the meeting minutes as an appendix to this report. The Committee's review of the NASA response constituted the April 27 deliberation by the Committee and was noted by Mr. Alexander at the outset, as the prime focus of the deliberative meeting of the Committee.

NASA Advisory Council Recommendation 2010-03-06 Defining the NASA Market

Mr. Alexander noted the Council recommended last August that NASA assess and define the NASA traffic requirements for crew transport to and from the International Space Station and Low Earth Orbit destination prior to issuing a draft solicitation for the Commercial Crew Transportation Program iteration designated CCDEV 2. Mr. Alexander also noted the Commercial Space Committee as part of its deliberations leading up to the NAC recommendation to NASA, recommended an analysis of NASA crew needs: # of seats, # of crew members, length of crew rotation, etc. Mr. Alexander noted NASA's formal reply concurred with this recommendation and indicated as part of NASA's planning process two approaches: 6 month crew missions for exploration research and three to four month crew missions to optimize subject numbers for physiological research.

Several Committee members noted NASA's stance that crew rotations of four per year would have a prohibitive cost impact, was silent on any potential benefits to that number of crew rotations and appeared to place in a negative light the concept of four crew rotations per year.

Mr. Trafton indicated NASA should encourage more research engagement on the International Space Station.

Dr. Harris questioned what was meant by NASA concurrence for this Council recommendation: was the concurrence an acknowledgement of the NASA Advisory Council recommendation, therefore the recommendation made to the Council by the Commercial Space Committee, or was the concurrence a simple acknowledgement of the need for traffic models?

Mr. Alexander indicated that the Committee needs to track how the flight and crew configuration will ultimately play out.

Mr. Levin was interested in finding out if the Committee can as part of its deliberative process, recognize NASA's response but also express the need for further clarification of the agency's response.

Dr. Harris and Mr. Alexander indicated there should be a briefing to the Commercial Space Committee prior to release of the next iteration of the Commercial Crew Development program, and to put this particular response by NASA as part of a "watch list" to track and have as part of the next deliberation of the Commercial Space Committee. This was identified as a specific action for the Committee to recommend.

NASA Advisory Council Recommendation 2010-03-07, Concept of Operations and Acquisition Approach

The Advisory Council recommendation stated NASA should structure the crew transportation service acquisition approach and ISS concept of operations to take maximum advantage of the variety of potential commercial transportation capabilities and that future commercial crew transportation solicitations simply specify the minimum and maximum number of seats to and from the ISS NASA would purchase in a given solicitation. This would allow bidders flexibility to structure the offer that best fits the offeror's business model.

Mr. Alexander noted NASA concurred with this recommendation and stated it will use commercial partners to the fullest extent possible.

General Hard suggested the first sentence of NASA's response should have included not only a reference of the greatest extent practical within budget constraints, but also taking into account the viability of the commercial partners.

Dr. Harris noted the last paragraph of NASA's response infers NASA will go beyond a minimum/maximum number of seats, with additional performance objectives.

Mr. Alexander indicated NASA will include crew rescue requirements of 4 seats/vehicle which leaves out certain vehicles such as Soyuz and reduces flexibility of commercial firms in their response to NASA requirements. He indicated the performance objectives will define too great a level of requirements and will not invite commercial approaches to meeting those requirements. Mr. Alexander indicated in two weeks there will be several documents released to the public that will provide more information of NASA's intent.

Ms. Smith asked if the minimum and maximum number of seats the same? Mr. Alexander indicated no, the requirements document alluded to different numbers of seats. What is left open is the contract mechanism, i.e. fixed price vs. cost.

NASA Advisory Council Recommendation 2010-03-08, Federal Aviation Administration (FAA) Licensing

The Council statement agreed with NASA that Federal Aviation Administration (FAA) licensing of

Commercial Crew services should be the “eventual state”. The Council recommended that NASA engage the FAA as soon as possible to discuss FAA licensing of Commercial Crew with the goal of providing clarity to potential offerors.

Mr. Alexander noted NASA’s response was a concurrence with “eventual state” of having FAA license commercial launches. NASA’s reply noted collaboration with FAA including mutual training opportunities, a close working relationship, etc.

Mr. Alexander and Dr. Harris noted NASA’s response of forming a good working relationship but this did not address directly the FAA licensing issue.

Ms. Smith noted NASA’s reply was based on the Justice Department’s 1985 legislation which provided for the “substantial involvement” claim to be applied where the government is not required to obtain a license for government launch purposes. Ms. Smith indicated NASA is still relying on that legislation to guide their present actions.

Dr. Harris concurred with this observation, that NASA is using the legislation as a reason for NASA to not go through licensing procedures on NASA sponsored missions; Mr. Alexander added to that statement by noting NASA’s reason for this stance is that the agency is certifying the flight.

Mr. Levin noted there was a positive aspect to NASA’s response, where the NASA statement speaks of working with the FAA and an ultimate goal of optimizing Government oversight of commercial providers through the use of compatible requirements, standards and processes for certifying or licensing commercial crew flights.

General Hard questioned whether this interpretation of compatible requirements is acceptable to the Committee?

Mr. Levin indicated the NAC recommendation was to provide clarity to potential offerors regarding government licensing policies.

Mr. Alexander also raised the question if the NASA response was satisfactory, or is the licensing vs. certification by NASA issue harmful to commercial space?

General Hard raised a similar question, if this issue is pushed down the road, does inaction harm the commercial sector?

Dr. Harris indicated there are long-term implications if there are mixed crews of NASA and non-astronaut crew members. He raised the question, should there be one licensing agency for commercial crew? He also raised the question, is the FAA qualified to certify crews?

Mr. Alexander noted that there can be NASA certification and FAA licensing co-existing in flight activity.

General Hard noted there is precedence: the Air Force agrees to comply with and often goes beyond FAA regulations governing their flight activity. He stated he is convinced that flight vehicles should be FAA licensed and NASA certified where there is NASA involvement.

Mr. Levin indicated that at a minimum there needs to be clarification which was along the lines of the original recommendation proposed by the Commercial Space Committee. He noted the Committee

did soften its recommendation language; does the Committee want to return to this issue and re-open its recommendation?

Dr. Harris raised a procedural question, does the Committee track this area or offer a comment to address a continuing concern?

Mr. Levin noted the Committee had one conclusion which it softened. He indicated the Committee should probe the NASA response more thoroughly before rendering any further opinion.

Mr. Smith indicated she wanted to know what does the term “eventual state” represent in actuality? General Hard noted there is nothing wrong with the desire for a better understanding of what is meant by this term.

General Hard and Mr. Alexander indicated part of the Committee’s concern is that NASA was unilaterally interpreting acquisition strategy rather than having an appropriate level of interaction with strategic leadership in the FAA. In a similar vein, Mr. Alexander expressed concern that the “close working relationship” with FAA mentioned in the NASA response, is not at the appropriate level of management.

Mr. Alexander also raised the concern that NASA officials may take an acquisition strategy forward but such a strategy may not include all facets such as input from NASA Safety and Mission Operations.

Led by Mr. Alexander, the Committee agreed with the action that with the passage of a year since this was raised by the Commercial Space Committee in 2010, the Committee should be briefed on what is the progress of the present status towards the “eventual state” of FAA licensing, and what is the level of interaction noted in the NASA response....is the interaction at the operational level, or is the interaction at the strategic level of NASA and the FAA? The intent is to invite the appropriate NASA and FAA officials brief the Committee in its next meeting, likely in the beginning of August.

NASA Advisory Council Recommendation 2010-03-09, Business Case for Commercial Crew Transportation

The Council recommended NASA continue to develop internal metrics and milestones to oversee its Commercial Crew Transportation program and associated industry. NASA’s response was to concur with the recommendation and indicated plans to develop internal metrics and milestones to measure performance within the commercial crew program.

Mr. Alexander noted there needs to be additional financial metrics and to look beyond commercial crew, to see what other aerospace portfolios there are in existence for comparison, as part of an overall business strategy.

Mr. Levin indicated NASA’s response is in the right direction. NASA also needs to be mindful of other factors and metrics.

Mr. Alexander indicated NASA’s response to the Council’s recommendation appears to be on track.

Recognizing that the agency is about to release its commercial space market assessment report, an

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action will be to request a briefing by NASA to the Commercial Space Committee in its next meeting. It was also expressed that the assessment should take into account the full spectrum including other significant non-NASA users such as DOD.

The Committee concluded its meeting with a discussion about the next meeting of the Committee, which will likely be on August 2 at Ames Research Center, prior to the meeting of the NASA Advisory Council which will meet later that week at Ames Research Center. It is Mr. Alexander's understanding that the individual committees of the NASA Advisory Council will meet during the day on August 2 and will have a reception that evening to foster interaction among Committee members.

Mr. Alexander offered others attending the meeting to comment or ask any questions they may have. With no questions or comments brought to the Committee, the meeting was adjourned by Mr. Emond at 3:30.

National Aeronautics and Space Administration
Office of the Administrator
Washington, DC 20546-0001

February 14, 2011



Dr. Kenneth Ford
Chairman
NASA Advisory Council
Washington, DC 20546




Dear Dr. Ford:

Enclosed are NASA's responses to four recommendations from the NASA Advisory Council meeting held August 5-6, 2010, at the Jet Propulsion Laboratory. Please do not hesitate to contact me if the Council would like further background on these responses. I appreciate the Council's thoughtful consideration leading to these recommendations and welcome its continued observations and advice concerning NASA's plans and programs.

I look forward to working closely with you and the members of the Council in the future.

 Sincerely,


4 Enclosures:

Charles F. Bolden, Jr. Administrator

1. 2010-03-06 (CSC-02) Defining the NASA Market
2. 2010-03-07 (CSC-03) Concept of Operations and Acquisition Approach
3. 2010-03-08 (CSC-04) Federal Aviation Administration (FAA) Licensing
4. 2010-03-09 (CSC-05) Business Case for Commercial Crew Transportation

Tracking Number 2010-03-06
(CSC-02) Defining the NASA
Market

NASA Advisory Council Recommendation:

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The Council recommends that NASA assess and define the NASA traffic requirements for crew transport to and from the International Space Station (ISS) and other Low-Earth Orbit (LEO) destinations prior to issuing a draft solicitation for the Commercial Crew Transportation program. The number of flights and/or seats per year purchased by NASA on U.S. commercial spaceflight vehicles has a significant impact on the business plans of and availability of private investment for commercial providers. In assessing its requirements, NASA should consider how the availability of commercial space transportation capabilities could change the concept of operation of the ISS to get the most out of its infrastructure.

NASA Response:

NASA concurs with this recommendation. Crew transportation requirements for the ISS are defined through 2020 based on current operational and research requirements. Today, a total of six United States Operating Segment crewmembers are required to be rotated per year on two flights approximately six months apart. As part of NASA's strategic planning process, NASA will consider how commercial space transportation capabilities could affect or change the ISS concept operations.

From a Human Research Program (HRP) perspective, there are two ISS mission lengths that enable HRP research: 1) six months (or longer) to simulate exploration mission lengths; and 2) three to four months to maximize the number of subjects for physiological experiments. Both of these ISS mission-length scenarios are valuable to HRP depending on the specific issue being addressed. However, increasing the number of crew rotations to four per year will essentially double the ISS cost for crew transportation, training, sustaining, and provisioning the additional crewmembers, which would amount to multiple billions of dollars in additional cost to the ISS Program.

Enclosure 1

Tracking Number 2010-03-07 (CSC-03)
Concept of Operations and Acquisition Approach

NASA Advisory Council Recommendation:

The Council recommends that NASA structure the crew transportation service acquisition approach and associated ISS concept of operations to take maximum advantage of the variety of potential commercial transportation capabilities. The Council recommends that future commercial crew transportation service solicitations simply specify the minimum and maximum number of seats to and from the ISS NASA would purchase in a given solicitation. This approach will allow bidders flexibility to structure the offer that best fits the offeror's business model.

NASA Response:

NASA concurs and plans to maximize the number of commercial partners to the greatest extent practical within budget constraints. It is our goal to enable a diverse portfolio of commercial transportation service capabilities with the intent of allowing for the commercial industry to expand their business cases to include NASA's needs, as well as those of the public. We recognize the importance of supporting the business models of various potential partners and, as such, we are establishing processes and requirements that allow for flexibility throughout the life cycle of the program.

NASA's acquisition strategy is still in development. We hope to have a better definition of the instruments (or combination of instruments), performance objectives, and safety requirements

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and standards in the spring of 2011 to support a solicitation for commercial crew transportation development agreements.

However, is it unlikely that NASA will only specify the minimum and maximum number of seats. NASA has already identified additional performance objectives for commercial crew systems. For example, the 2010 NASA Authorization Act requires NASA to include crew rescue requirements in any solicitation for commercial crew capabilities.

Enclosure 2

Tracking Number 2010-03-08 (CSC-04)
Federal Aviation Administration (FAA) Licensing

NASA Advisory Council Recommendation:

The Council agrees with NASA that Federal Aviation Administration (FAA) licensing of Commercial Crew services should be the "eventual state." The Council recommends that NASA engage the FAA as soon as possible to discuss FAA licensing of Commercial Crew with the goal of providing clarity to potential offerors regarding the regulatory framework for both development and operation of Commercial Crew capabilities.

NASA Response:

NASA concurs that FAA licensing of Commercial Crew services should be the "eventual state."

It is the goal of the Commercial Crew to enable a diverse portfolio of commercial transportation service capabilities with the intent of allowing for the commercial industry to expand their business cases to include NASA's needs, as well as those of the public.

Although FAA licenses are not required for launch or reentry that the Government carries out for the Government, NASA has established a close working relationship with the FAA to define the requirements, standards, and certification processes for commercial spaceflight involving crew and passengers, all which will be used by NASA to certify crew transportation systems to transport NASA and NASA-sponsored crews to the ISS. The ultimate goal of this working relationship is to optimize Government oversight of commercial providers through the use of compatible requirements, standards, and processes for certifying or licensing commercial crew flights.

Through COTS and CRS, NASA works closely with the FAA to license launch and reentry events of commercial providers. In addition, NASA and the FAA are providing mutual training opportunities for key personnel by rotating managers in positions that will promote integration between the agencies and through formal training sessions. NASA is also working closely with the FAA as it establishes its Commercial Spaceflight Technical Center at KSC. In addition, to ensure safety of crew and passengers, NASA will contribute to the FAA and to industry its expertise and lessons learned in the inherently risky environment of space.

Enclosure 3

Tracking Number 2010-03-09 (CSC-05)
Business Case for Commercial Crew
Transportation

NASA Advisory Council Recommendation:

The Council recommends that NASA continue to develop internal metrics and milestones to oversee its Commercial Crew Transportation program and associated industry.

Appropriate internal experts can then use these tools to measure whether NASA crew needs will be met in a timely and cost effective manner under this program. Among other things, NASA should be aware of the impact of non-human spaceflight markets, such as cargo and traditional spacecraft launch, on the ability of commercial providers to offer viable crew transportation services, the cost, reliability, and safety implications of the overall commercial space transportation business, and the impact of domestic and foreign competition.

NASA Response:

NASA concurs and plans to develop internal metrics and milestones to measure performance within the commercial crew program.

As part of each acquisition instrument, NASA will negotiate milestones for progress payments to commercial providers. The performance of these milestones will be measured for all commercial providers in NASA's investment portfolio. Additional financial metrics will be developed and analyzed by Government personnel to protect sensitive and proprietary data of the commercial providers. All impacts will be tracked through the program's risk- management process and analyzed in relation to the performance metrics.

Regarding the impact of non-human spaceflight markets, NASA, in conjunction with the FAA, is performing a Commercial Market Assessment, as required by the 2010 NASA Authorization Act. This assessment will include "...the potential non-Government market for commercially- developed crew and cargo transportation systems and capabilities, including an assessment of the ISS research and technology development capabilities and other potential activities in low- Earth orbit."

Committee Membership

Bretton Alexander, Committee Chair
President, Commercial Spaceflight Federation

John Emond, Executive Secretary
Innovative Partnerships Program/Office of Chief Technologist
NASA Headquarters

Major General Donald Hard
U.S. Air Force (retired), independent consultant

Dr. Bernard Harris
CEO, Vasalius Ventures
Former astronaut, former SPACEHAB executive

Lon Levin, Committee Vice Chair
Co-founder, XM Satellite Radio and other satellite businesses

Patricia Grace Smith
Former FAA Associate Administrator for Commercial Space Transportation
Independent consultant

Wilbur C. Trafton
Former NASA Associate Administrator for Space Flight
Former executive at ILS and Kistler Aerospace